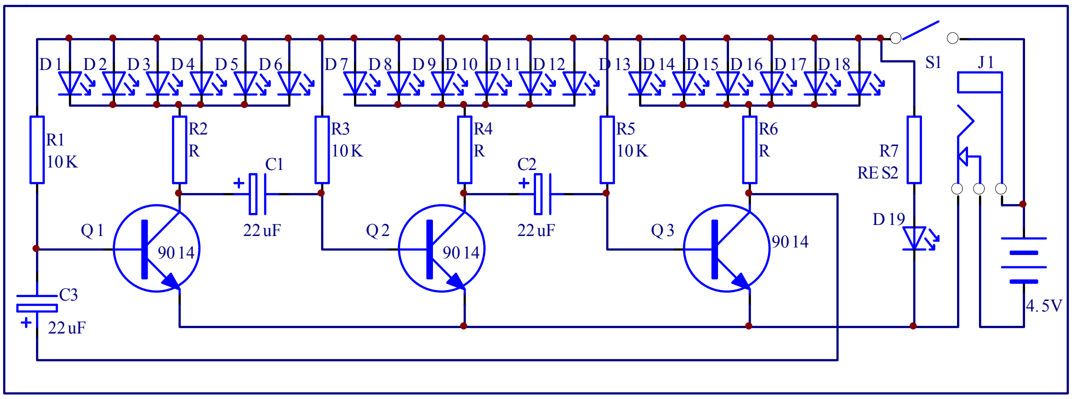
# Flash Christmas Tree DIY Kit

## 1.Schematic




## 2.Component listing

| NO. | Component Name | PCB Marker | Parameter | QTY |
|---|---|---|---|---|
| | | CTR-30A | | |
| 1 | Metal Film Resistor | R6 | 330ohm | 1 |
| 2 | Metal Film Resistor | R4 | 1K | 1 |
| 3 | Metal Film Resistor | R2 | 2K | 1 |
| 4 | Metal Film Resistor | R1,R3,R5,R7 | 10K | 4 |
| 5 | Electrolytic Capacitor | C1-C3 | 47uF 16V | 3 |
| 6 | Red LED | D1-D6,D19 | 3mm | 7 |
| 7 | Yellow LED | D7-D12 | 3mm | 6 |
| 8 | Green LED | D12-D18 | 3mm | 6 |
| 9 | S9014 Transistor | Q1-Q3 | TO-92 | 3 |
| 10 | PCB | CTR-30A | | 1 |
| | | CTR-30B | | |
| 11 | Metal Film Resistor | R6 | 330ohm | 1 |
| 12 | Metal Film Resistor | R4 | 1K | 1 |
| 13 | Metal Film Resistor | R2 | 2K | 1 |
| 14 | Metal Film Resistor | R1,R3,R5 | 10K | 3 |
| 15 | Electrolytic Capacitor | C1-C3 | 47uF 16V | 3 |
| 16 | Green | D1-D6 | 3mm | 6 |
| 17 | Yellow LED | D7-D12 | 3mm | 6 |
| 18 | Red LED | D12-D18 | 3mm | 6 |
| 19 | S9014 Transistor | Q1-Q3 | TO-92 | 3 |
| 20 | PCB | CTR-30B | | 1 |
| | | CTR-30C | | |

| | | | | |
|---|---|---|---|---|
| 21 | Self-Locking Switch | S1 | 5.8mm | 1 |
| 22 | DC Power Socket | J1 | 3.5mm | 1 |
| 23 | Battery Box | | AA*3 | 1 |
| 24 | USB to DC 3.5mm Cable | | 80cm | 1 |
| 25 | Screw | | M2*8mm | 2 |
| 26 | Nut | | M2 | 2 |
| 27 | PCB | CTR-30C | | 1 |

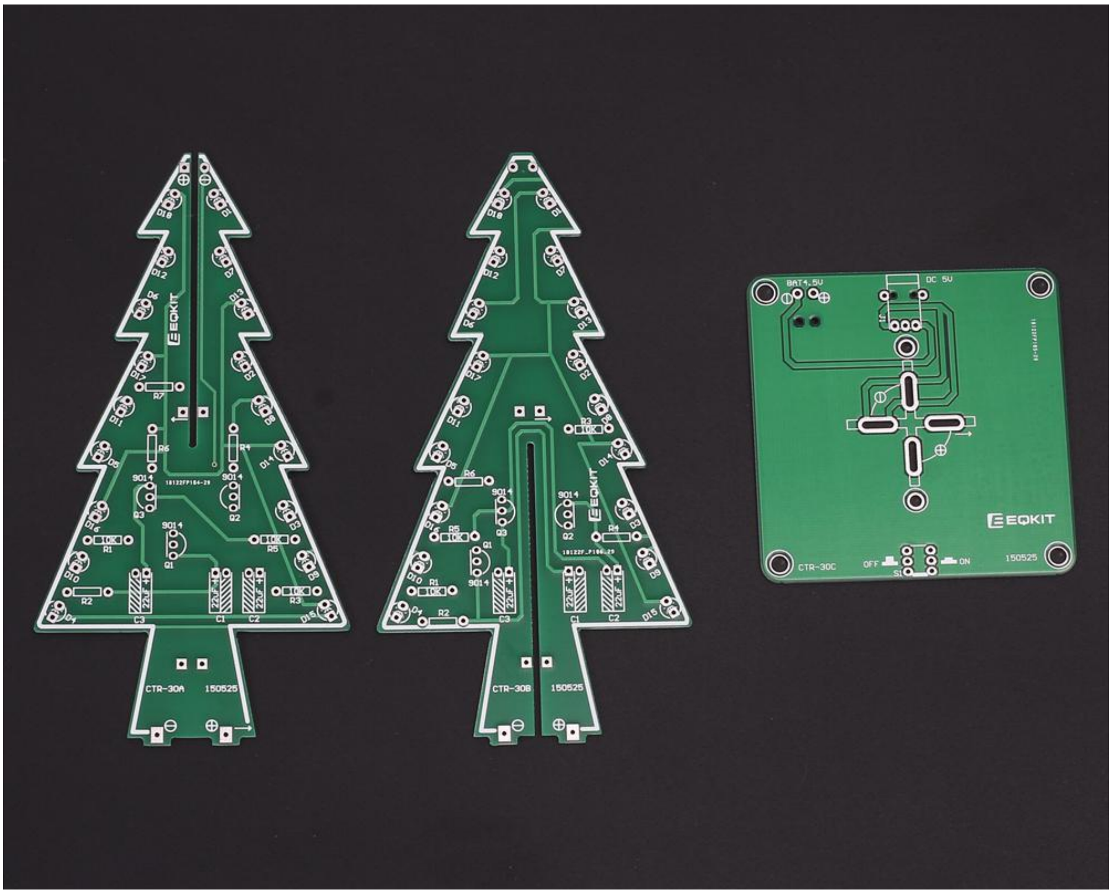
NOTE:Users can complete the installation by PCB silk screen and component listing.

## 3.Component Description

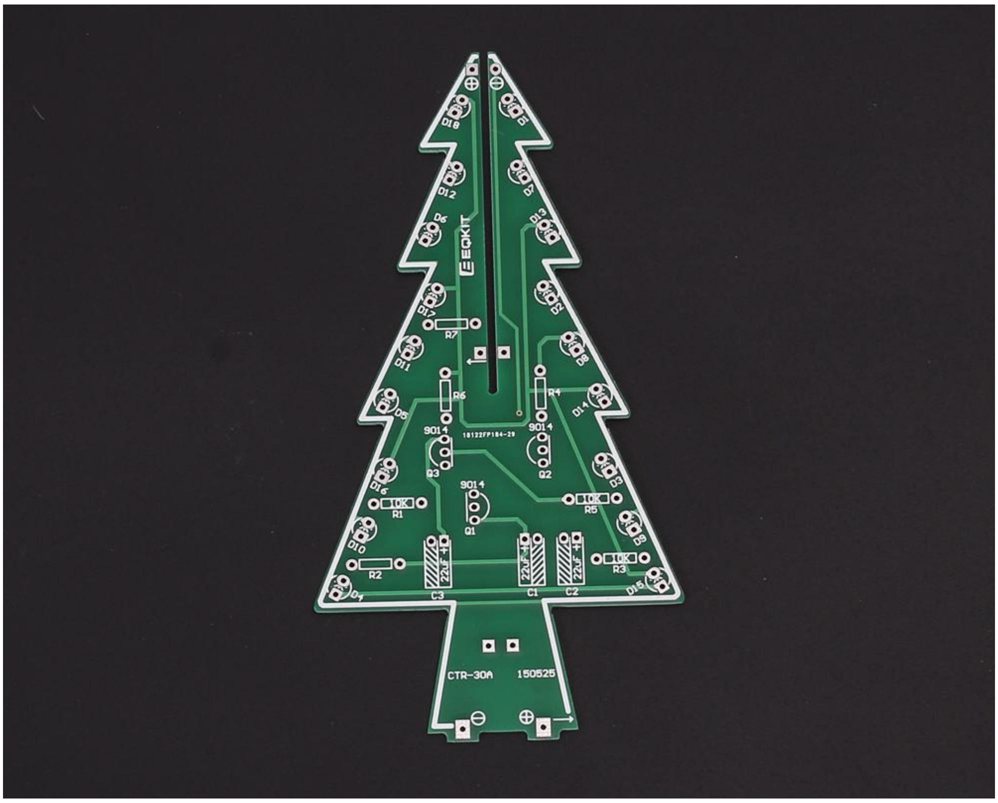


1>. 1pcs 330ohm Metal Film Resistor
2>. 1pcs 1K Metal Film Resistor
3>. 1pcs 2K Metal Film Resistor
4>. 4pcs 10K Metal Film Resistor
5>. 3pcs 47uF 16V Electrolytic Capacitor
6>. 7pcs 3mm Red LED
7>. 6pcs 3mm Yellow LED
8>. 6pcs 3mm Green LED
9>. 3pcs S9014 Transistor
10>. 1pcs PCB CTR-30A
11>. 1pcs 330ohm Metal Film Resistor
12>. 1pcs 1K Metal Film Resistor
13>. 1pcs 2K Metal Film Resistor
14>. 3pcs 10K Metal Film Resistor
15>. 3pcs 47uF 16V Electrolytic Capacitor
16>. 6pcs 3mm Green LED
17>. 6pcs 3mm Yellow LED
18>. 6pcs 3mm Red LED
19>. 3pcs S9014 Transistor
20>. 1pcs PCB CTR-30B
21>. 1pcs Self-Locking Switch
22>. 1pcs 3.5mm DC Power Socket
23>. 1pcs AA*3 Battery Box
24>. 1pcs USB to DC 3.5mm Cable
25>. 2pcs Screw M2*8mm
26>. 2pcs Nut M2
27>. 1pcs PCB CTR-30C

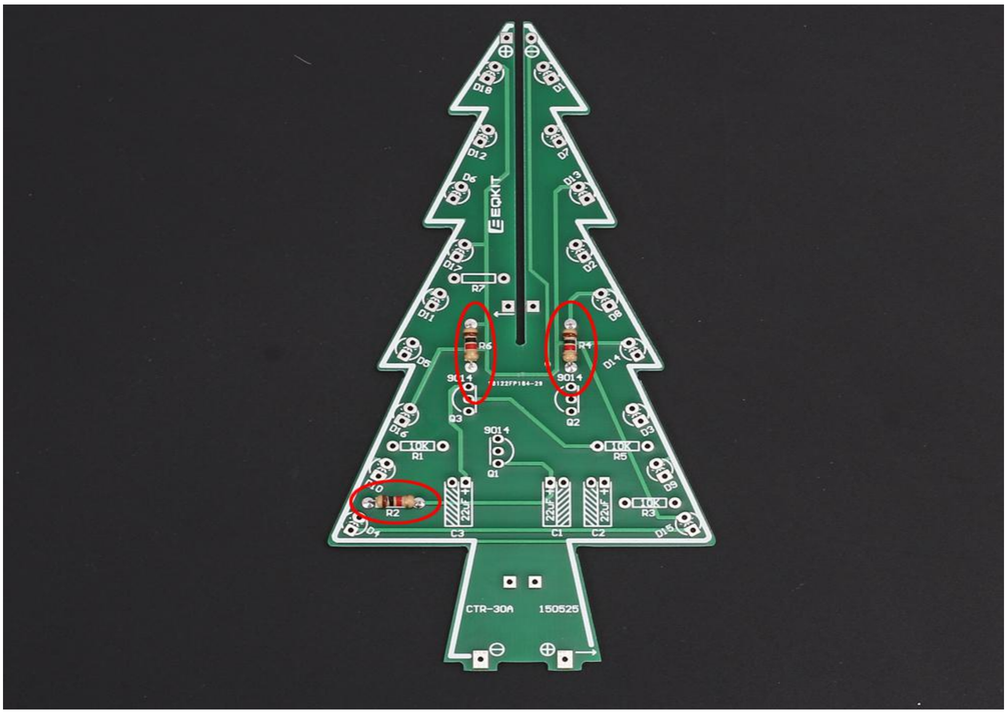
# 4.Installation Steps



1>. Install CTR-30A




Step 1: Install 1pcs Metal Film Resistor 330ohm on R6, 1pcs 1K on R4, 1pcs 2K on R2



# Step 2: Install 3pcs 10K Metal Film Resistor on R1,R3,R5



Step 3: Install 1pcs 10K Metal Film Resistor on R7




Step 4: Install 6pcs Red LED on D1-D6.

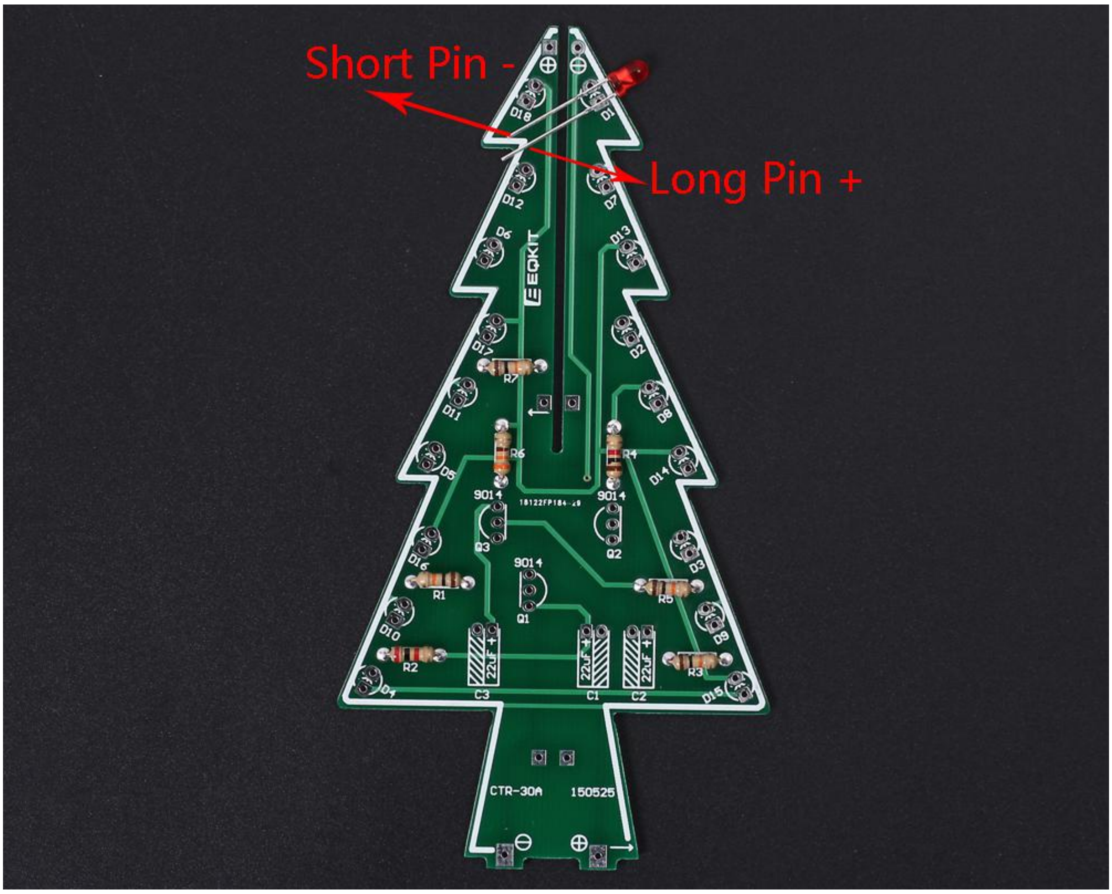
Tips:

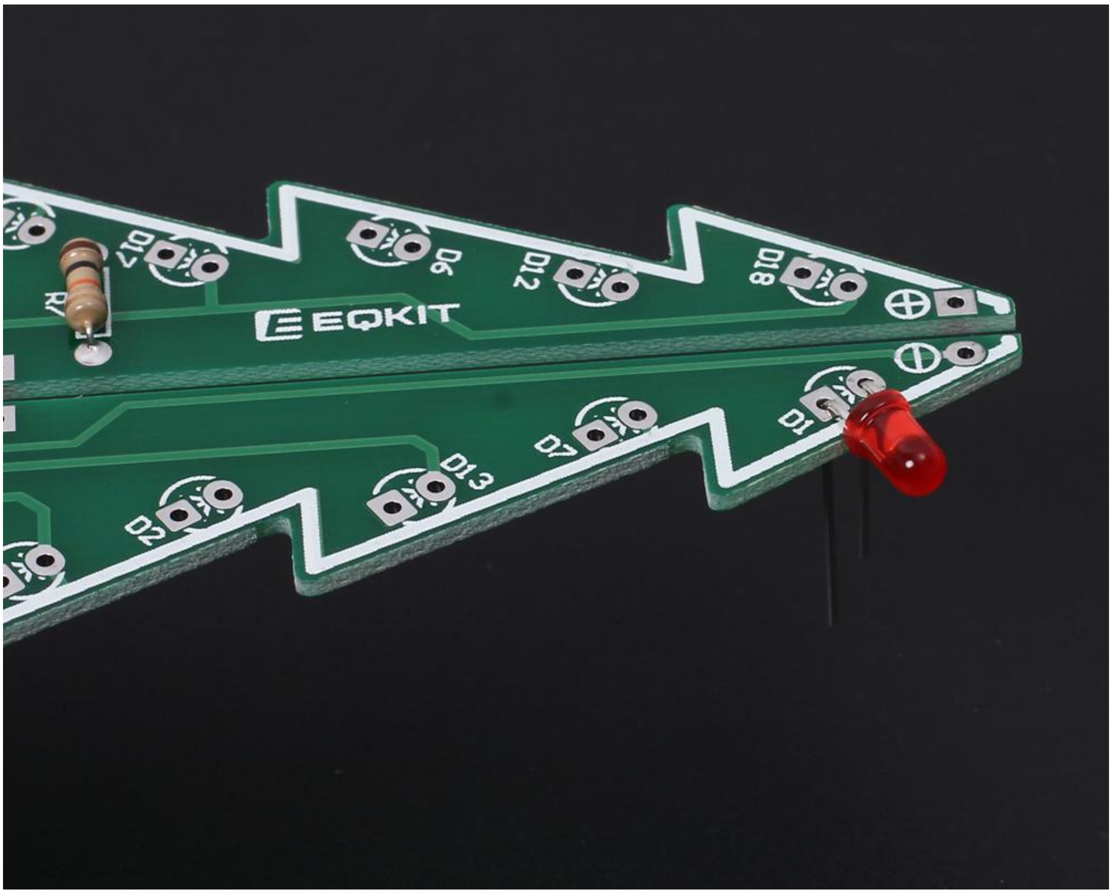
A. Note the direction of the LED

B. Control distance between PCB edge and LED head(Two ways).

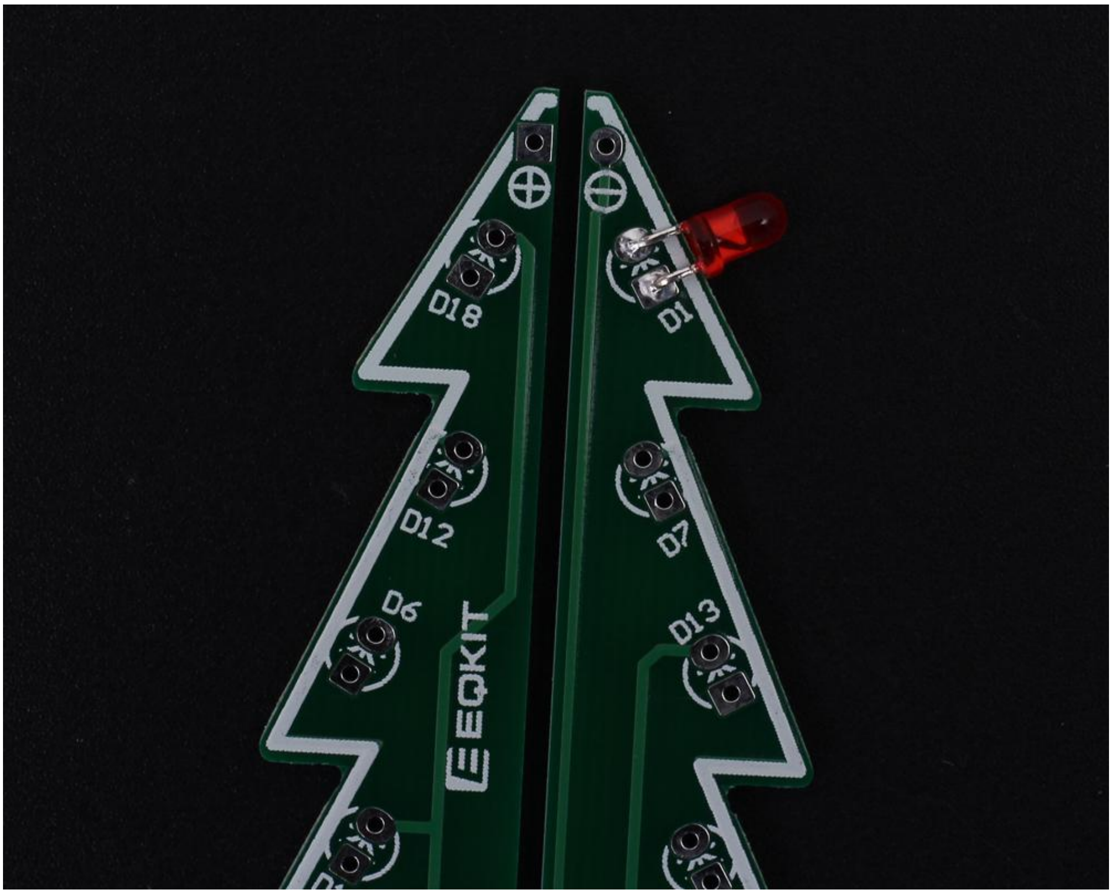
1). User can bend the LED pin at first after determining the distance and then insert LED to PCB through hole;

2). Insert LED to PCB through hole at first.Then determine the distance.Bend the LED pin at last.

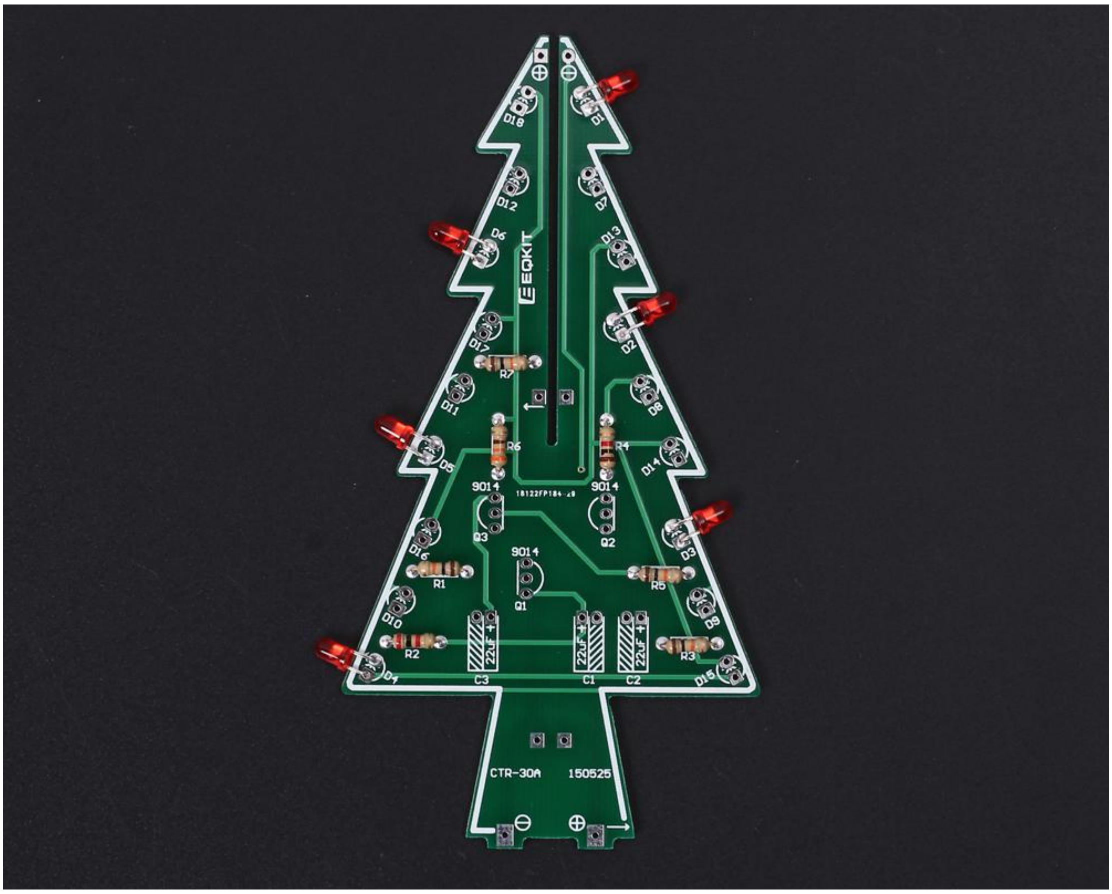

Short Pin -
Long Pin +



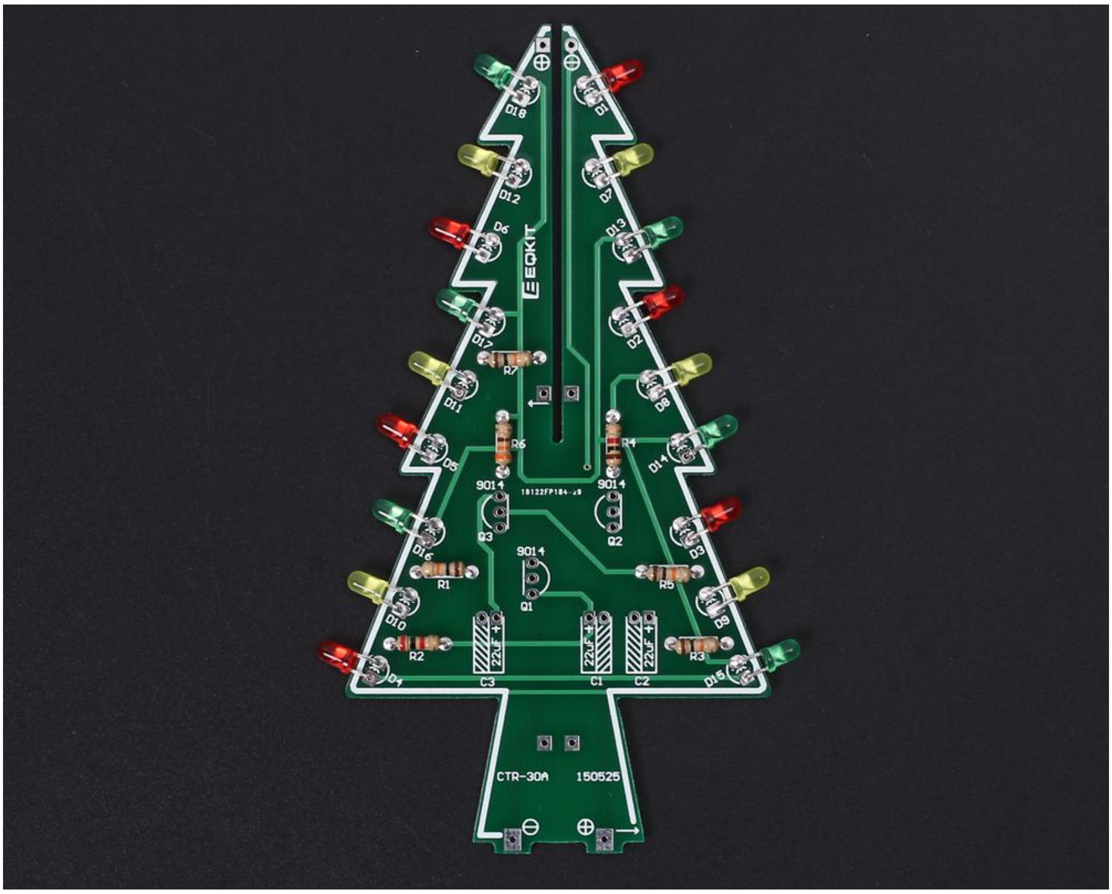

D18
D1
D12
D7
D6
D13
EQKIT
D17
D2
R7
D11
D8
R6
R4
D5
D14
9014
9014
Q3
Q2
9014
D16
D3
R1
R5
D10
Q1
D9
R2
22uF
22uF
22uF
R3
D4
C3
C1
C2
D15
CTR-30A
150525


D18
D1
D12
D7
D6
D13
EQKIT

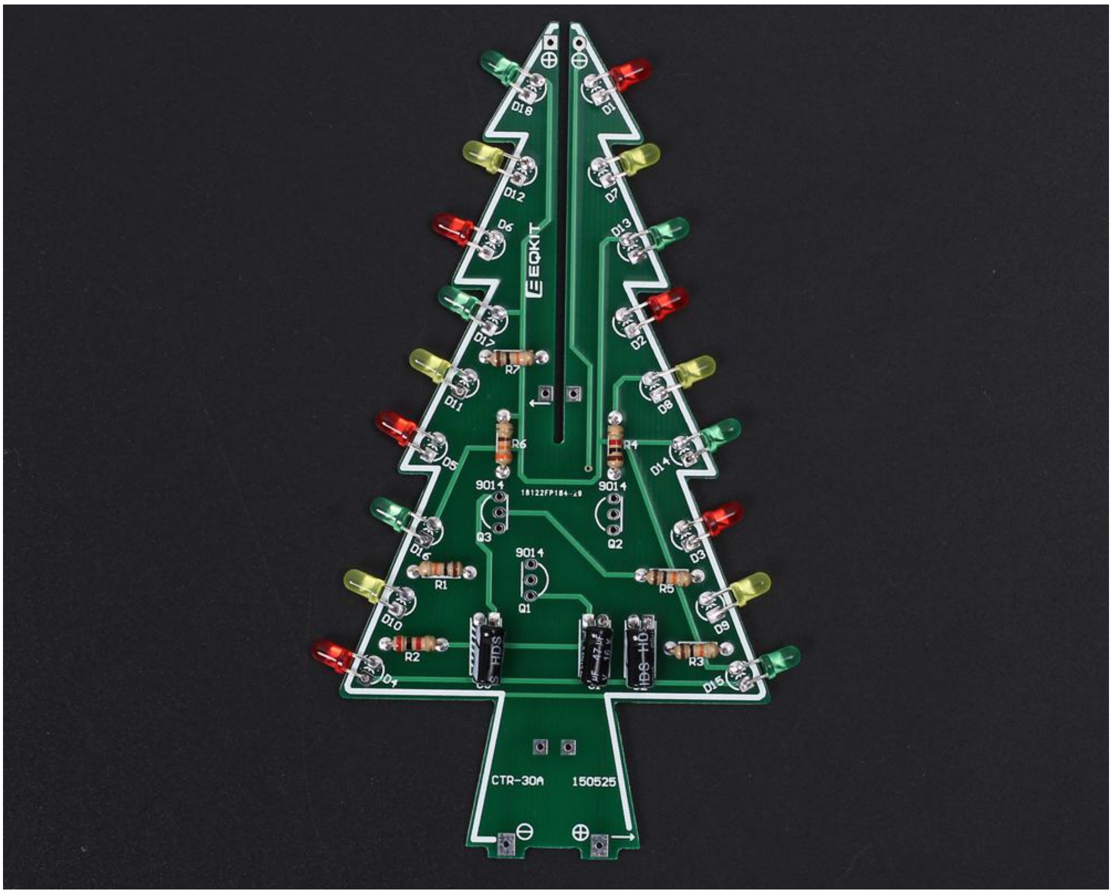

EQKIT
D6
D12
D18
D13
D7
D1
D2


EQKIT
D18
D1
D12
D7
D6
D13
D2
R7
D11
D8
R6
R4
D5
D14
9014
9014
Q3
Q2
D3
9014
R1
R5
Q1
R2
R3
C3
C1
C2
D15
CTR-30A
150525

Step 5: Install 6pcs Yellow LED on D7-D12,6pcs Green LED on D13-D18



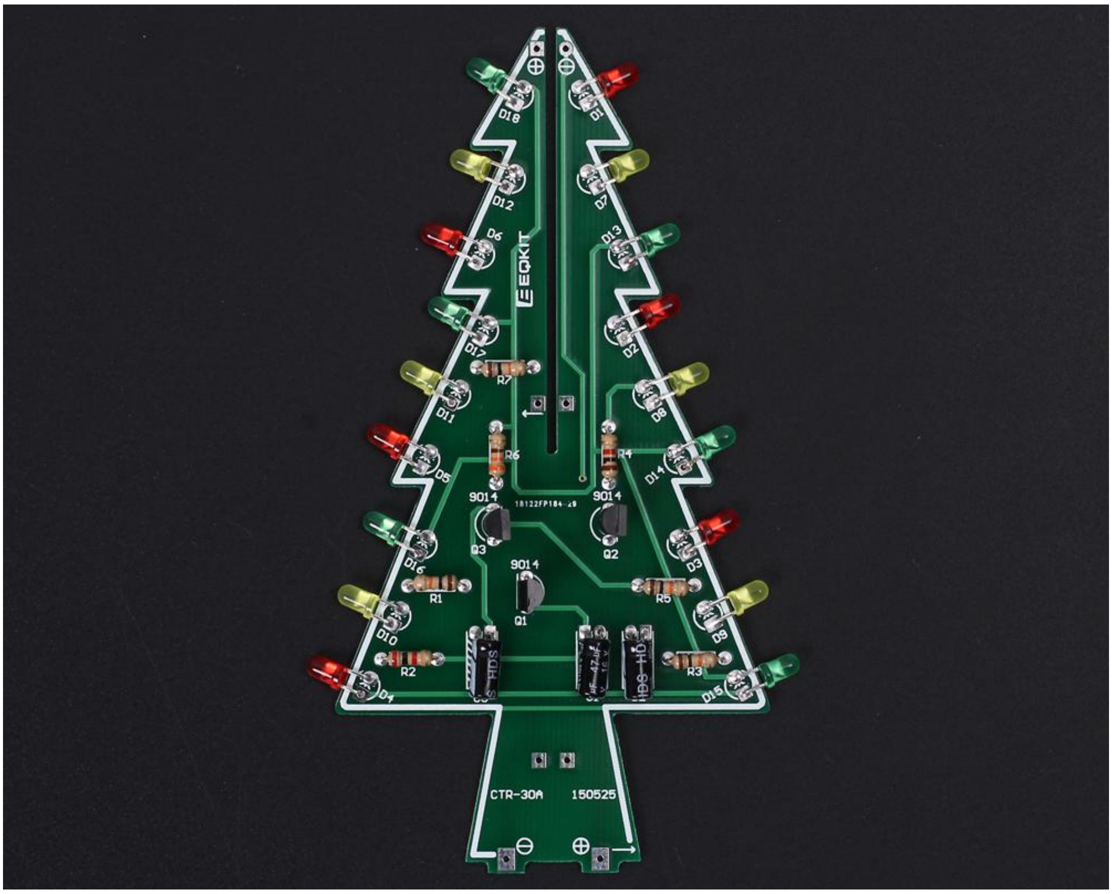
Step 6: Install 3pcs 47uF 16V Electrolytic Capacitor

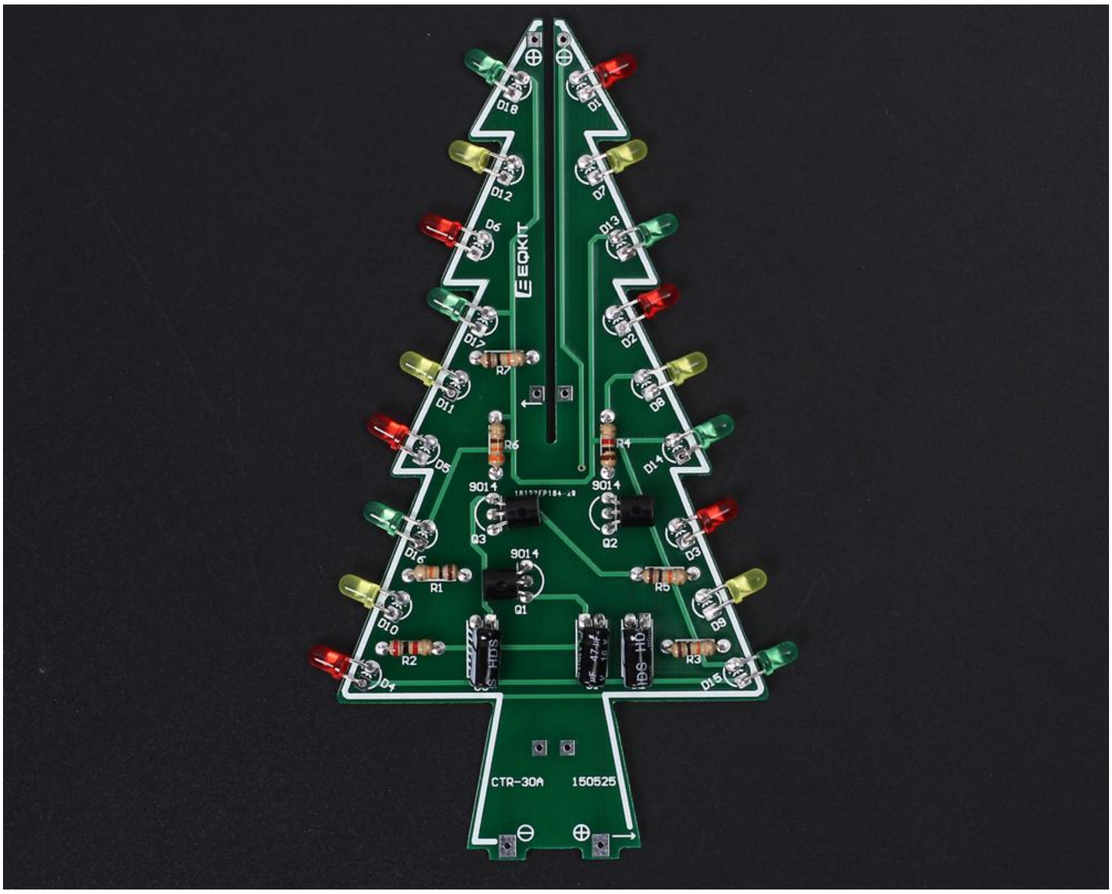


Step 7: Install 3pcs TO-92 S9014 Transistor

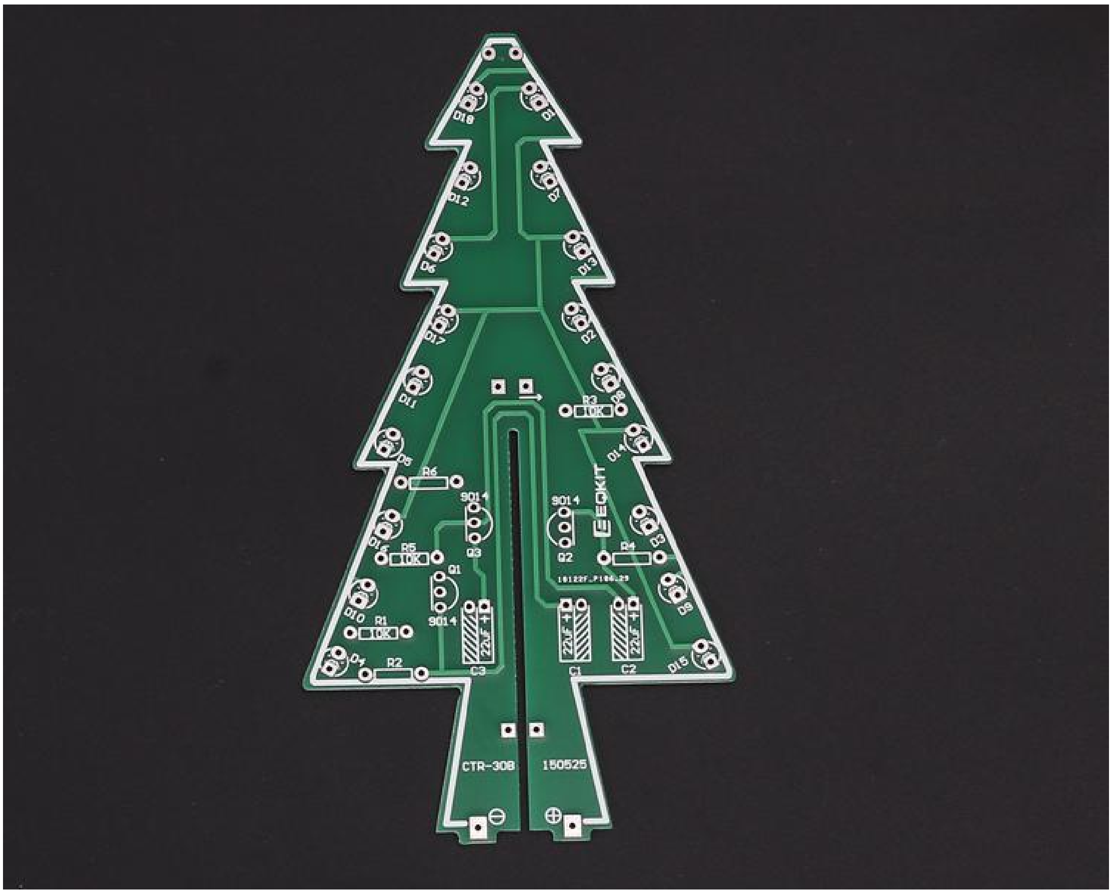
Tips: It is better to bend S9014's pin so that 2pcs PCB CTR-30A and CTR-30B can better splicing.

OK, CTR-30A has been installed completed.

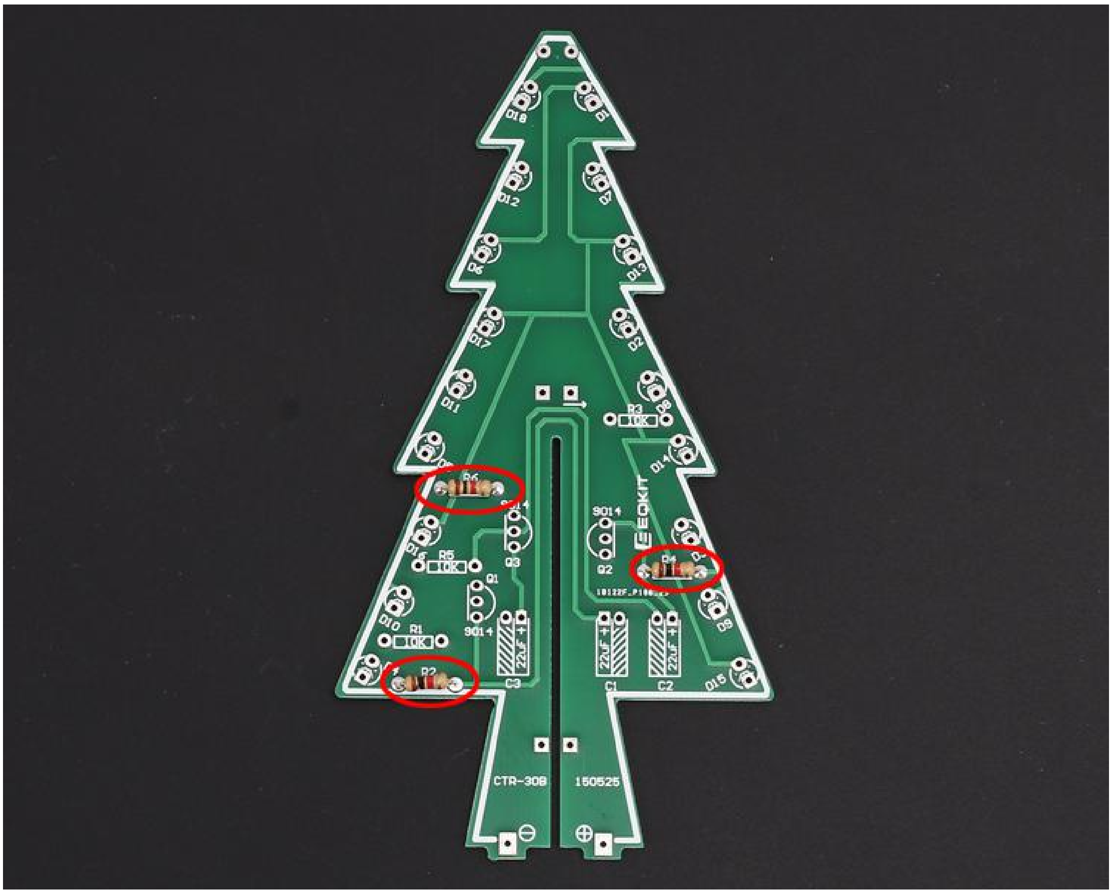

EQKIT
D18
D1
D12
D7
D6
D13
D17
D2
R7
D11
D8
R6
R4
D5
D14
9014
9014
Q3
Q2
D16
D3
9014
R1
R5
Q1
D10
D9
R2
R3
D4
D15
CTR-30A
150525


EQKIT
D18
D1
D12
D7
D6
D13
D17
D2
R7
D11
D8
R6
R4
D5
D14
9014
9014
Q3
Q2
D16
D3
9014
R1
R5
Q1
D10
D9
R2
R3
D4
D15
CTR-30A
150525

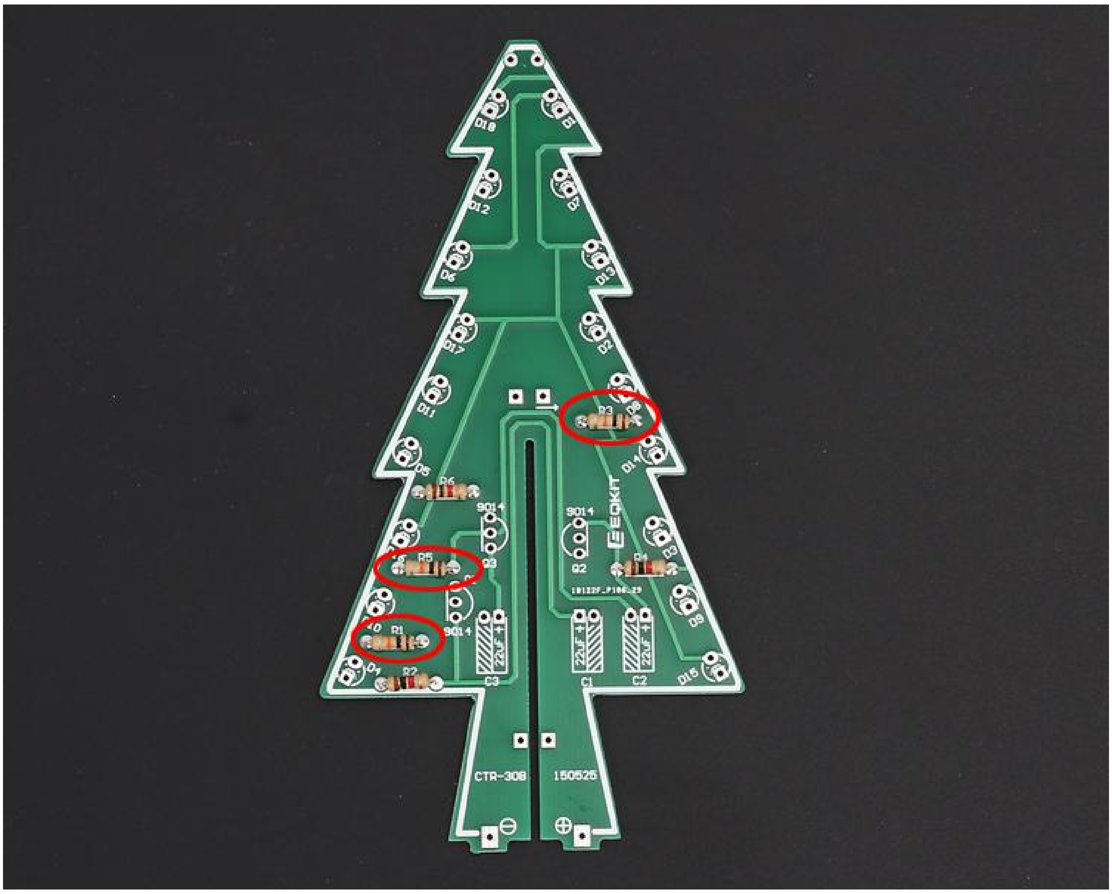
## 2>. Install CTR-30B



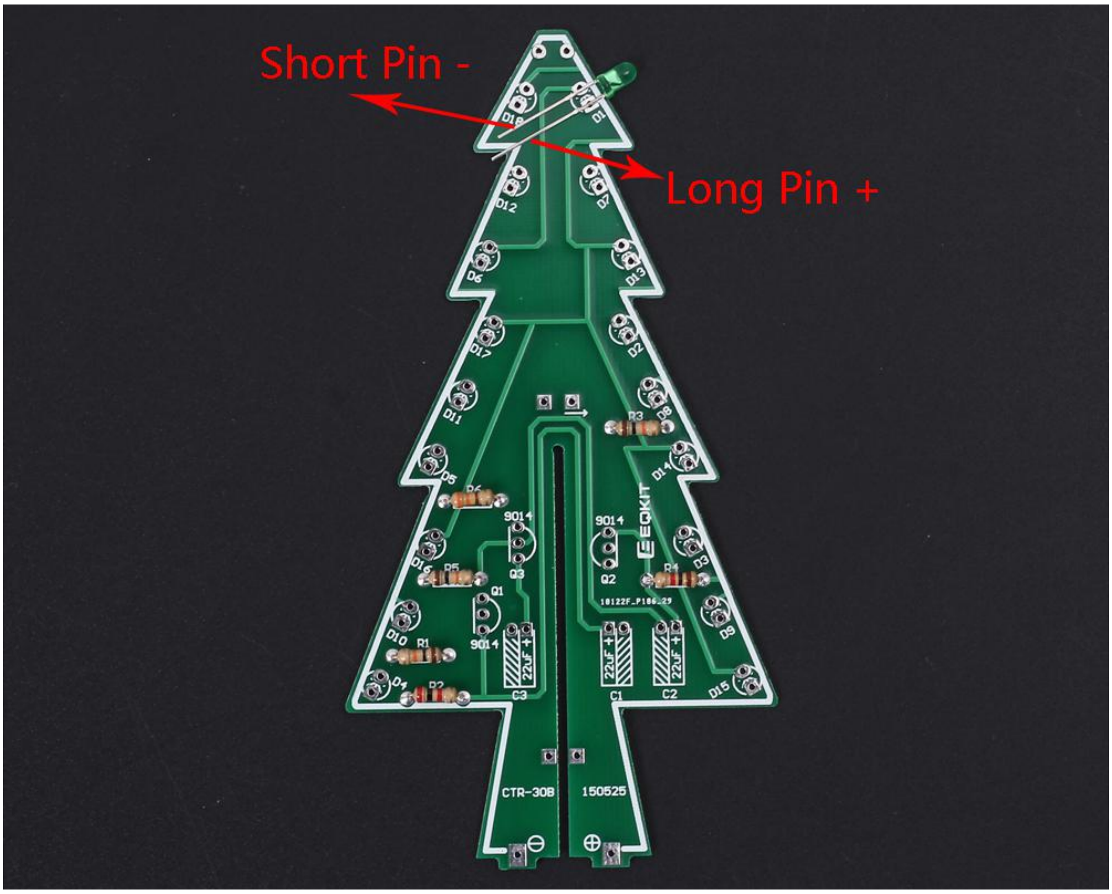
Step 8: Install 1pcs Metal Film Resistor 330ohm on R6, 1pcs 1K on R4, 1pcs 2K on R2

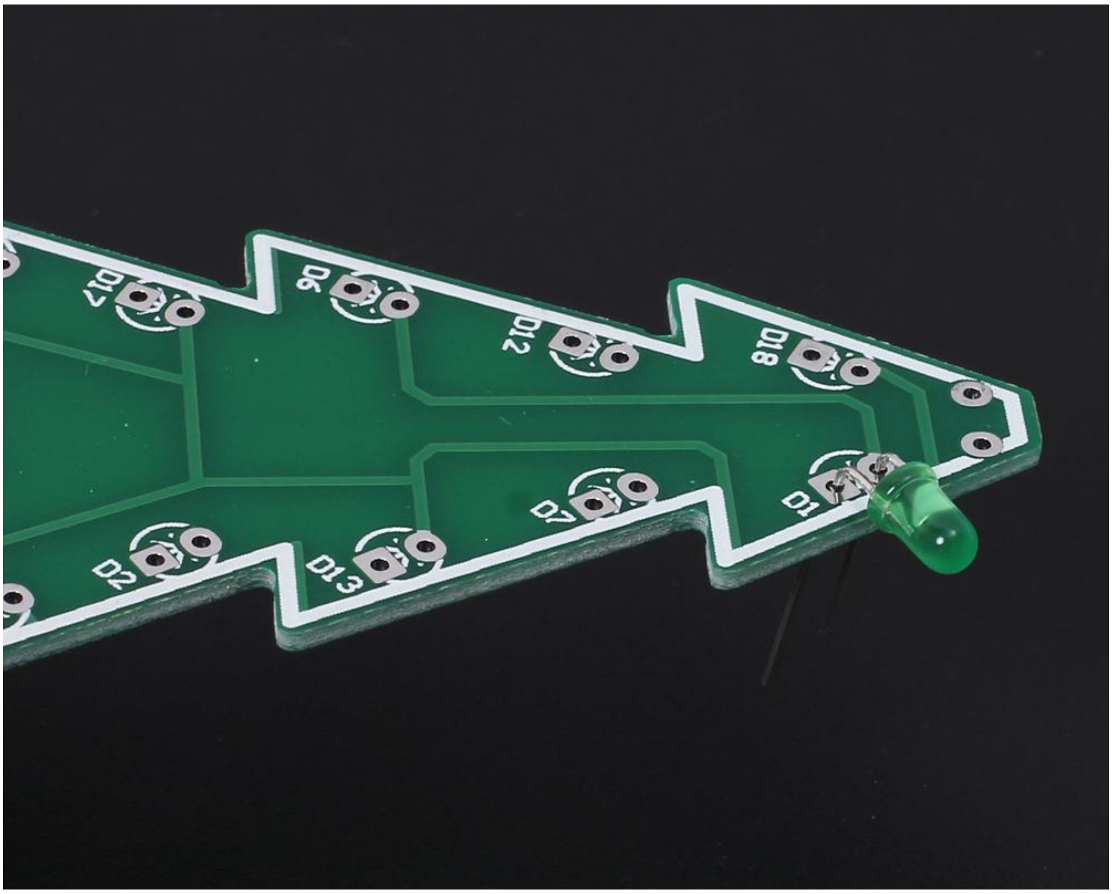


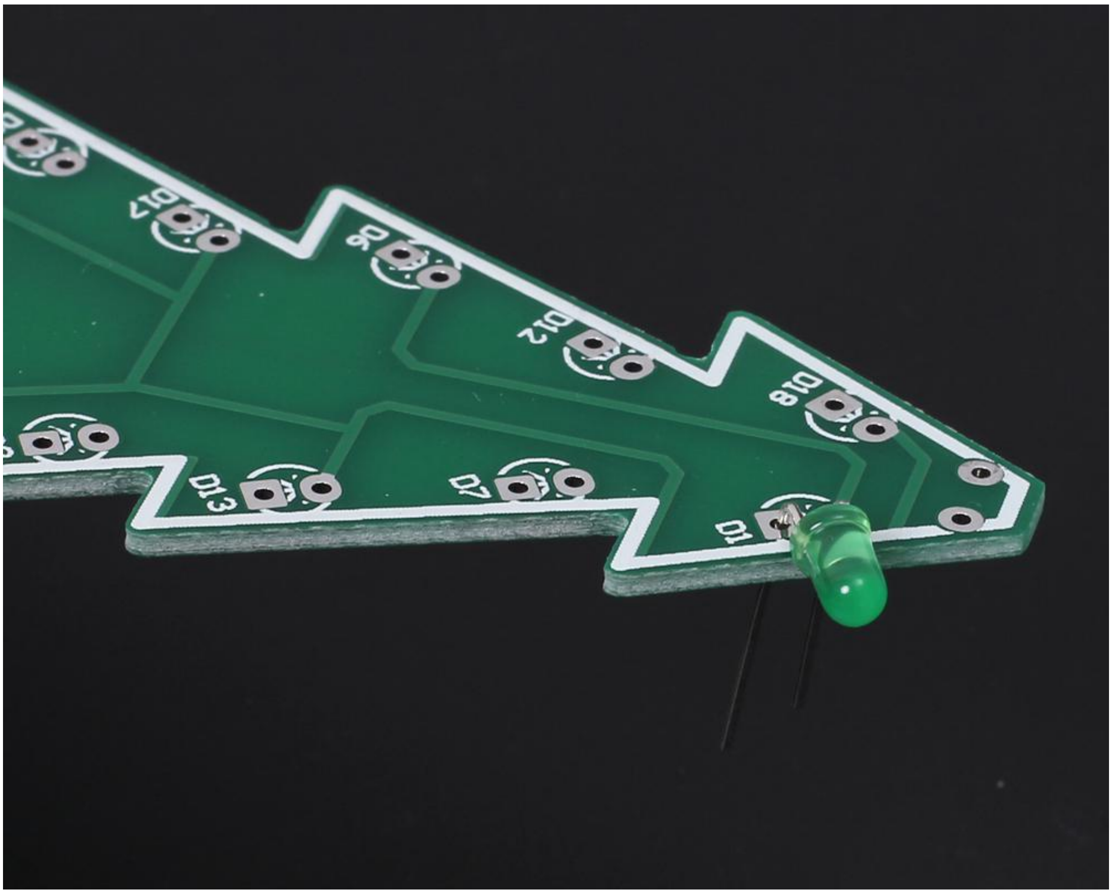
Step 9: Install 3pcs 10K Metal Film Resistor on R1,R3,R5

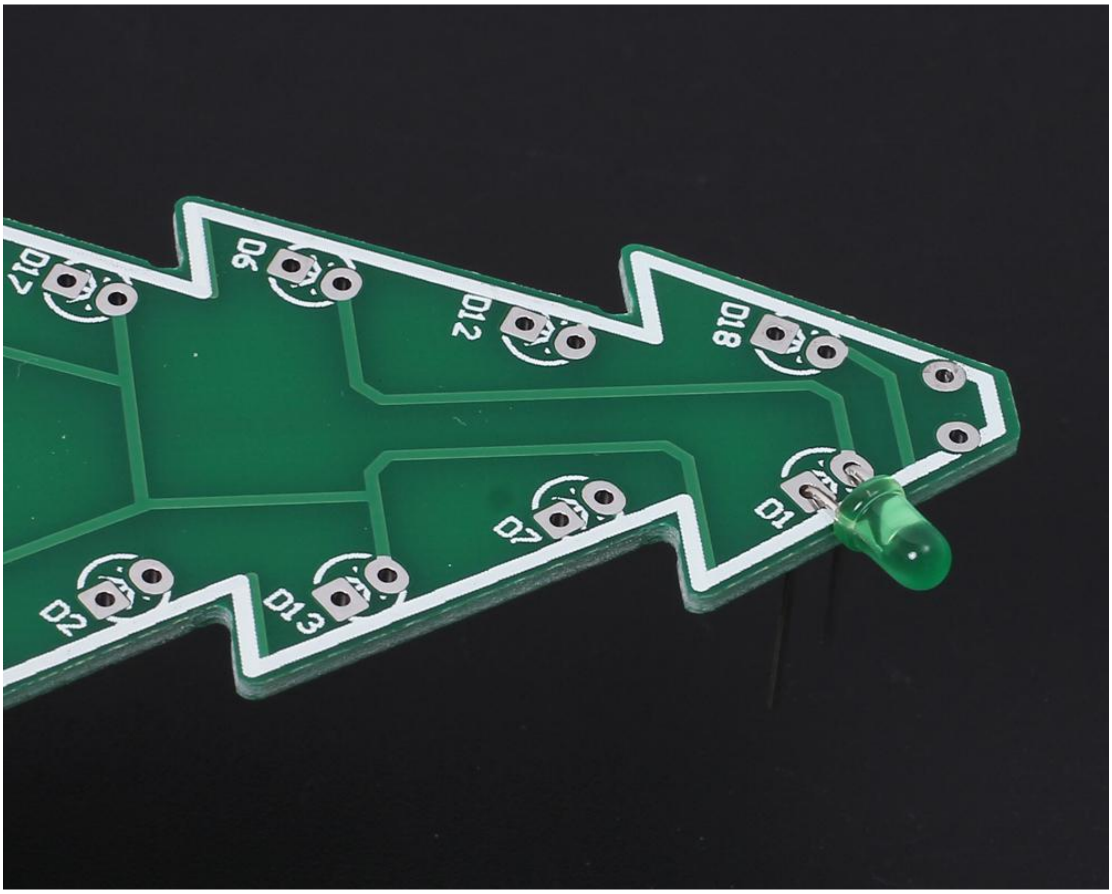


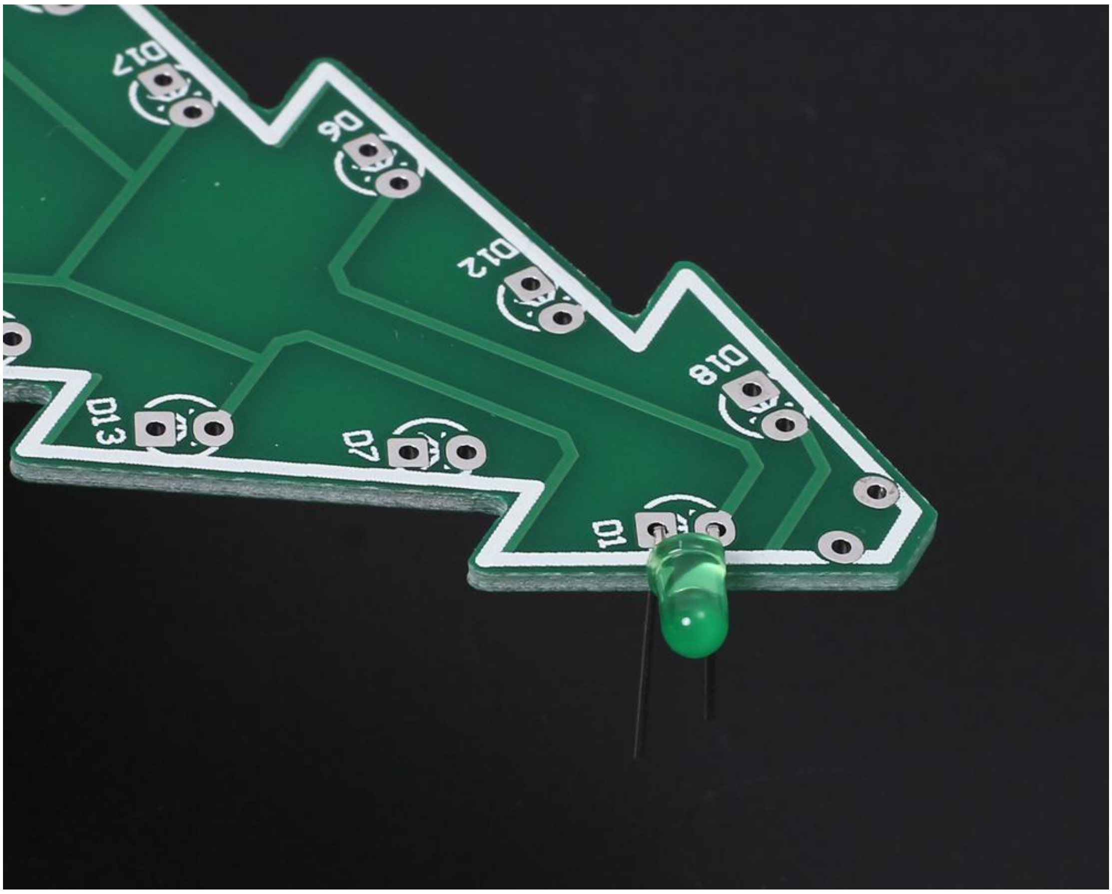
Step 10: Install 6pcs Green LED on D1-D6.




D17
D6
D12
D18
D13
D7
D1


D17
D6
D12
D18
D1
D7
D2
D13


D17
D6
D12
D18
D13
D7
D1


D18
D1
D12
D7
D6
D13
D17
D2
D11
D8
R3
D5
D14
9014
Q3
Q2
Q1
D3
C3
C1
C2
D15
CTR-308
150525

Step 11: Install 6pcs Red LED on D7-D12,6pcs Yellow LED on D13-D18



Step 12: Install 3pcs 47uF 16V Electrolytic Capacitor



Step 13: Install 3pcs TO-92 S9014 Transistor


CTR-30B
150525

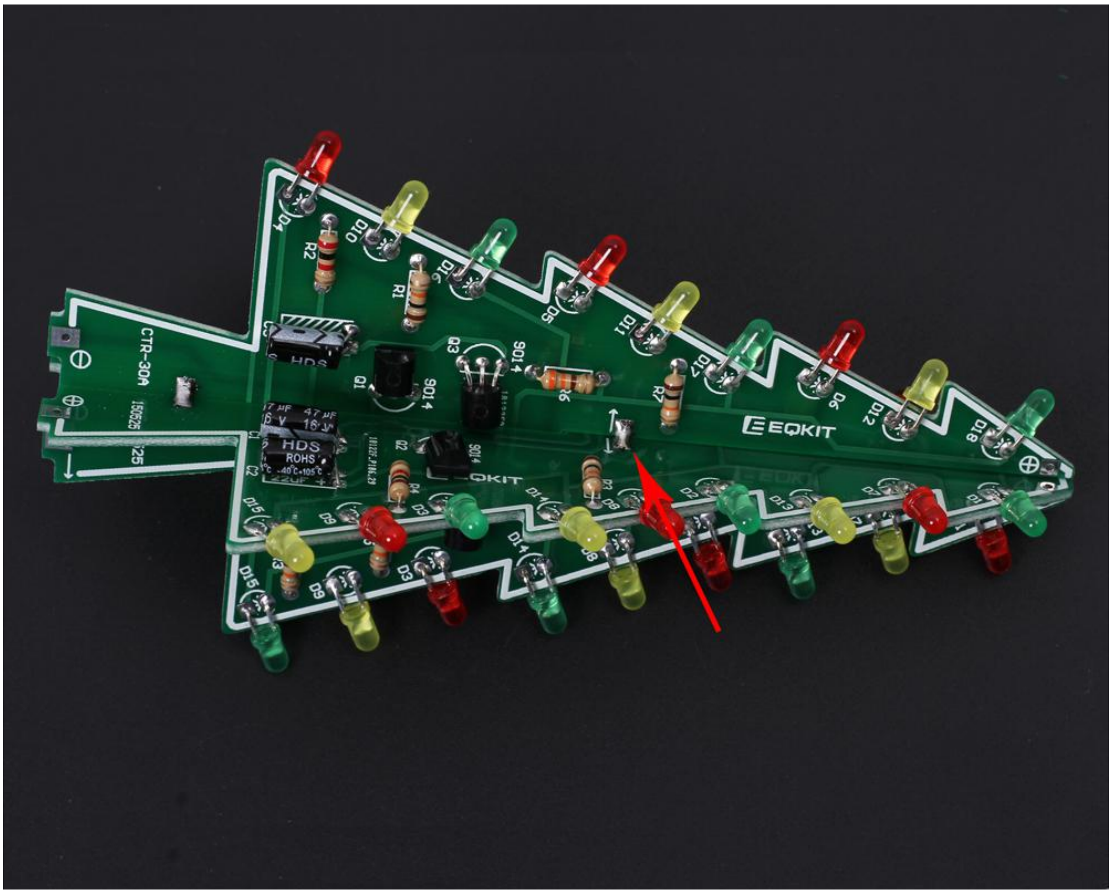

CTR-30B
150525

Step 14: Connect 5V to CTR-30A and CTR-30B.Preliminary welding success if LEDs are blinking automatically

3>. Stitching CTR-30A and CTR-30B

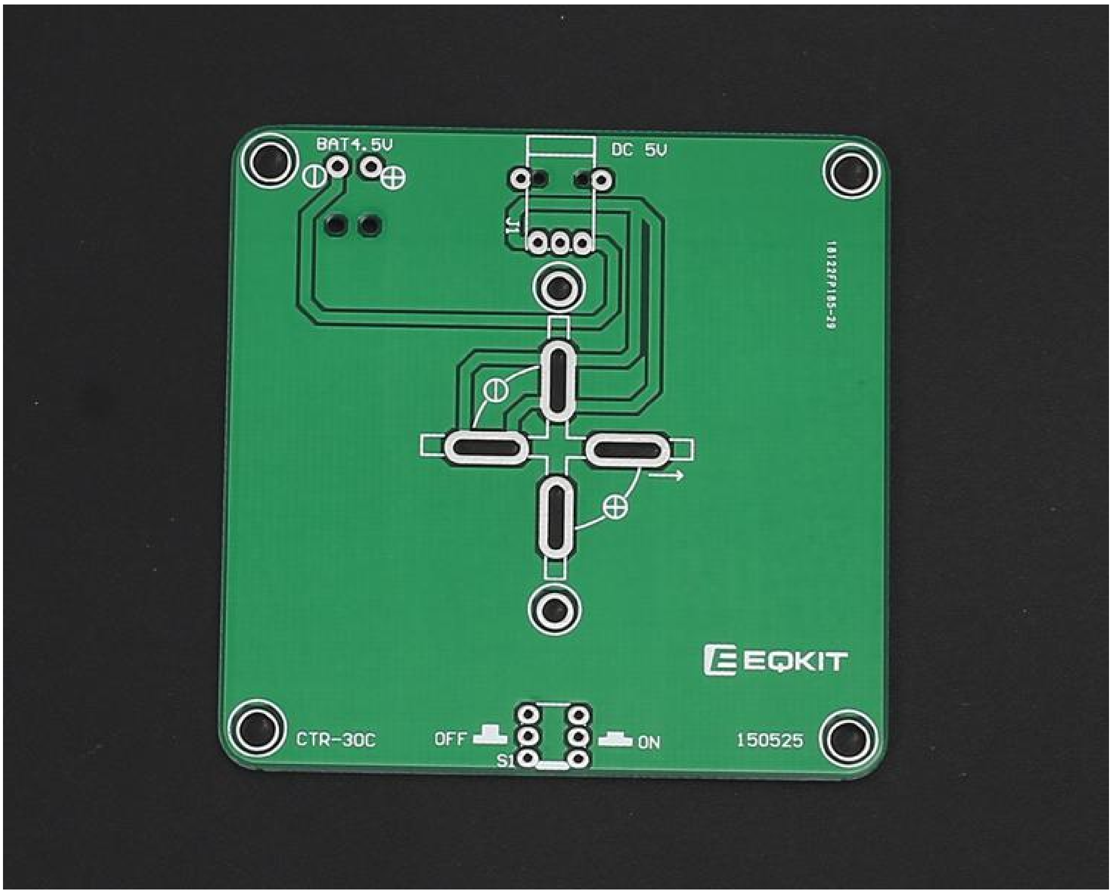
Step 15: Align the two positioning heads on CTR-30A and CTR-30B and then fixed with tin.



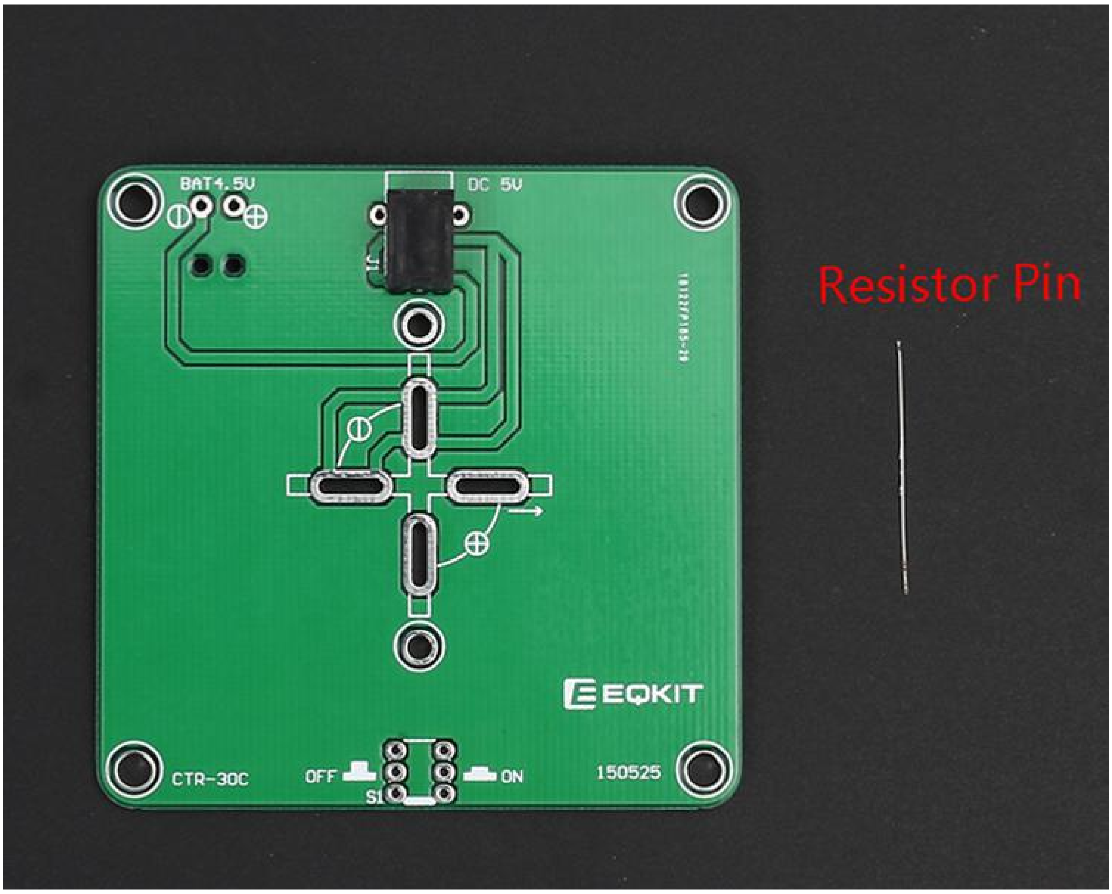

CTR-30A
EQKIT

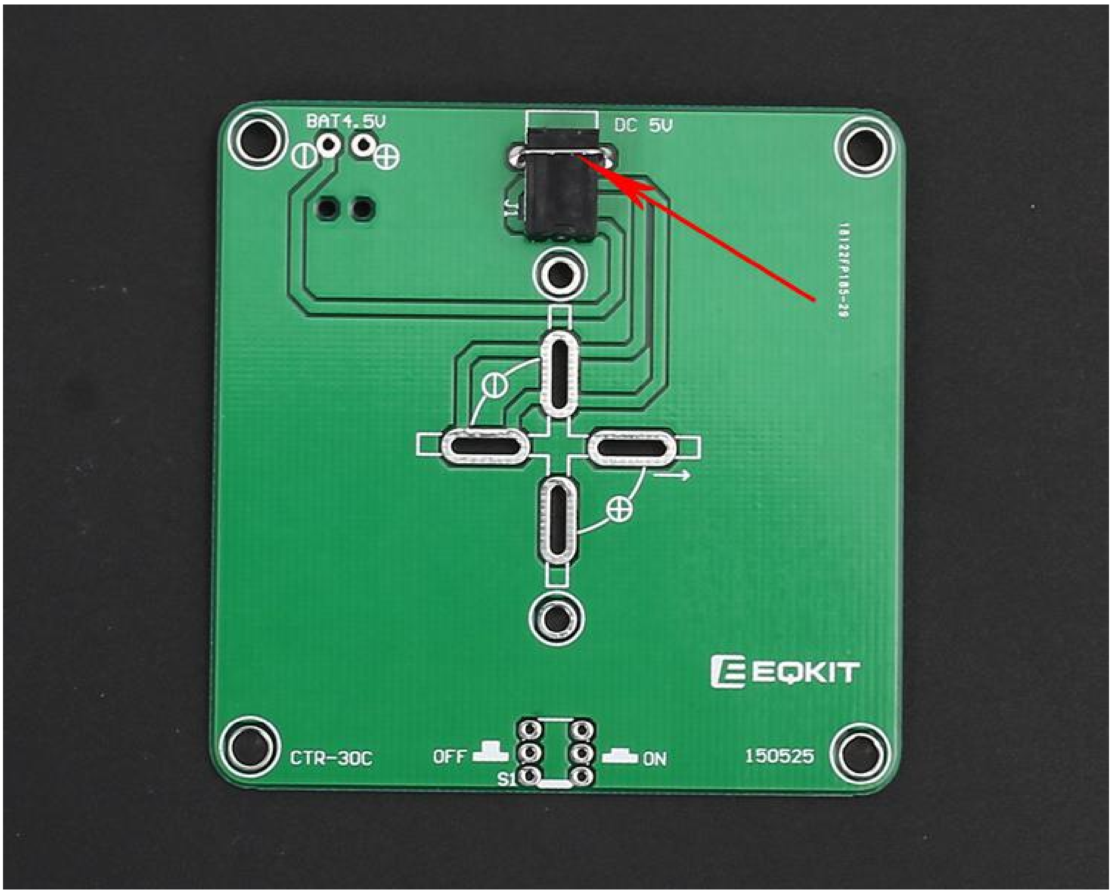

EQKIT
CTR-30A
150525

4>. Install CTR-30C

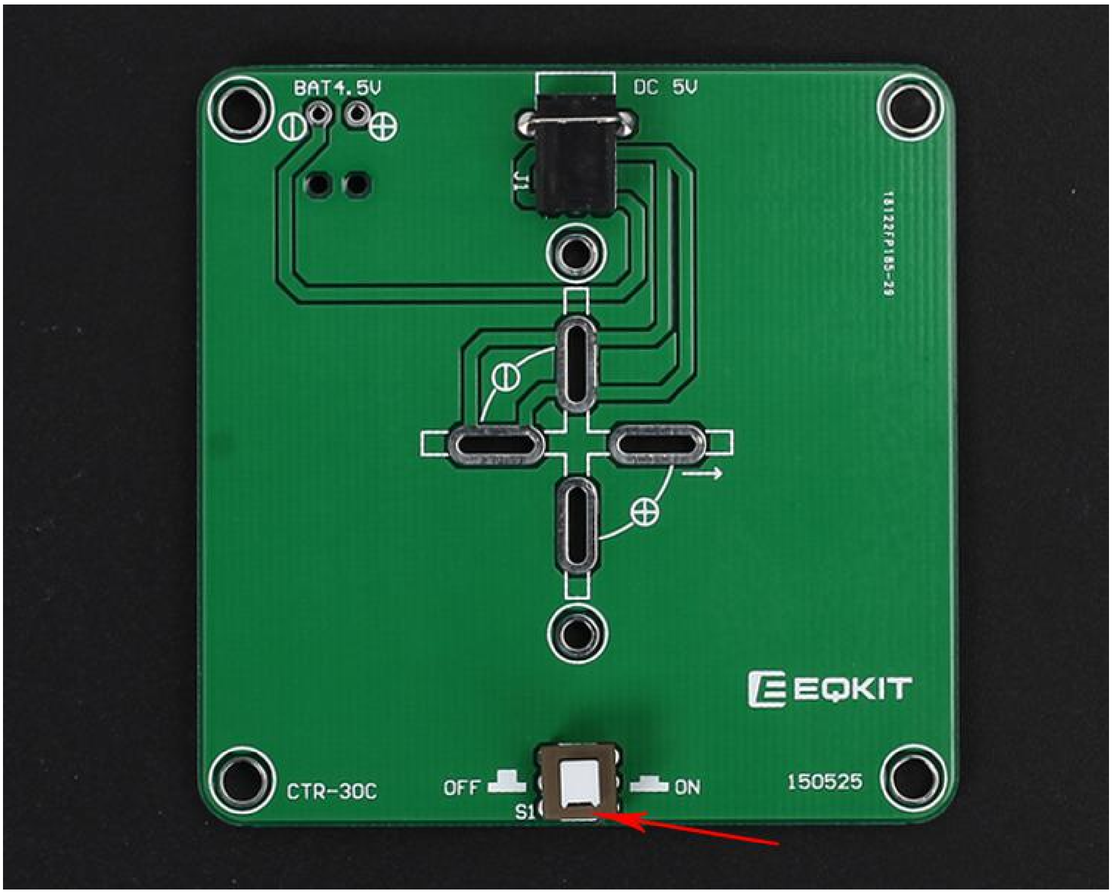



Step 16: Install Power Socket.Use a superfluous pin to fixed the power supply socket.This pin can come from resistor.


BAT4.5V
DC 5V
EQKIT
CTR-30C
OFF
ON
S1
150525
Resistor Pin


BAT4.5V
DC 5V
EQKIT
CTR-30C
OFF
ON
S1
150525

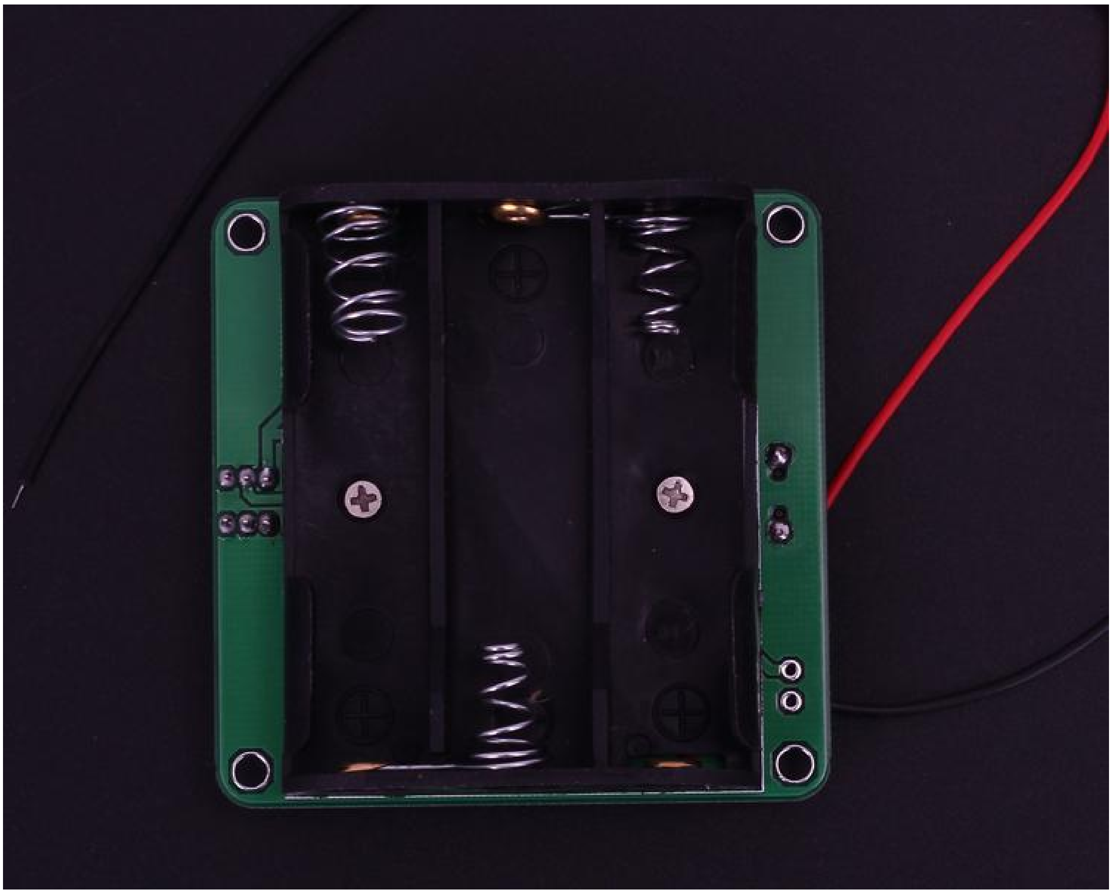
Step 17: Install 1pcs Self-Locking Switch. Note the direction of switch. The concave side is close to the PCB edge.

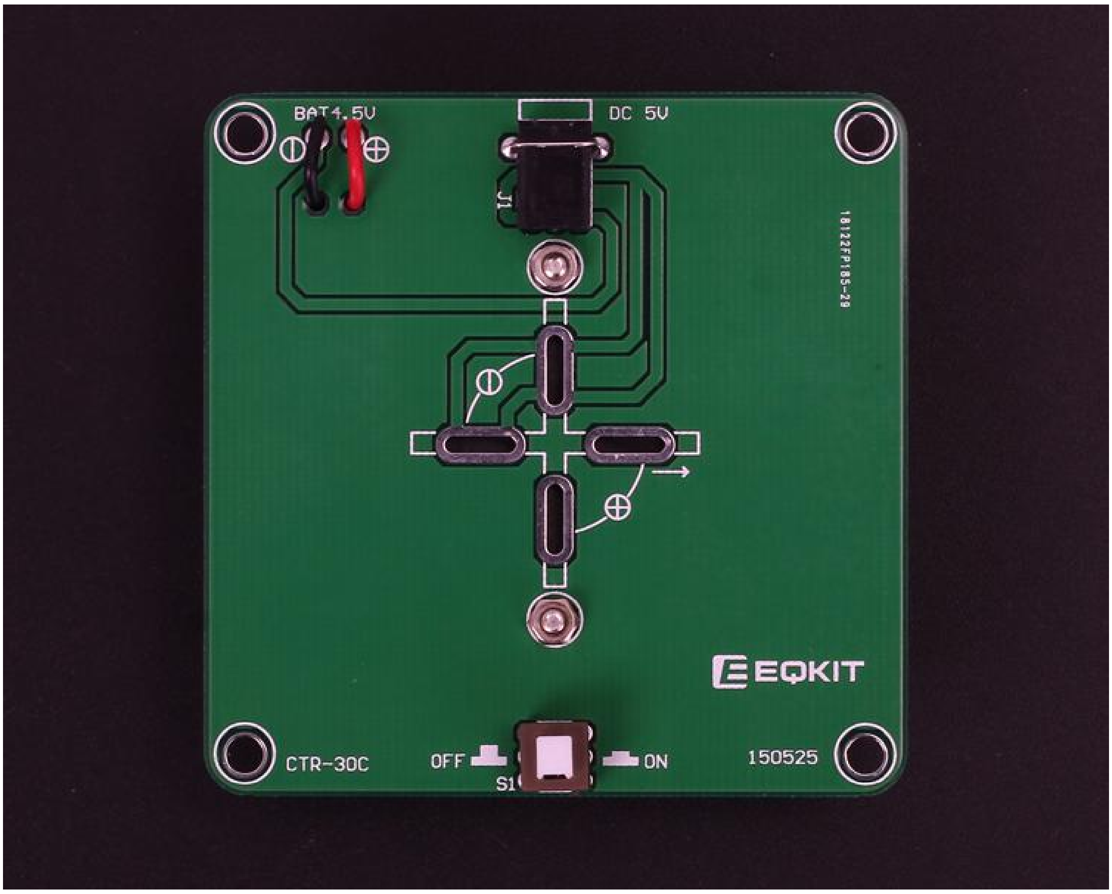



Step 18: Install battery box and fixed by screw/nut.

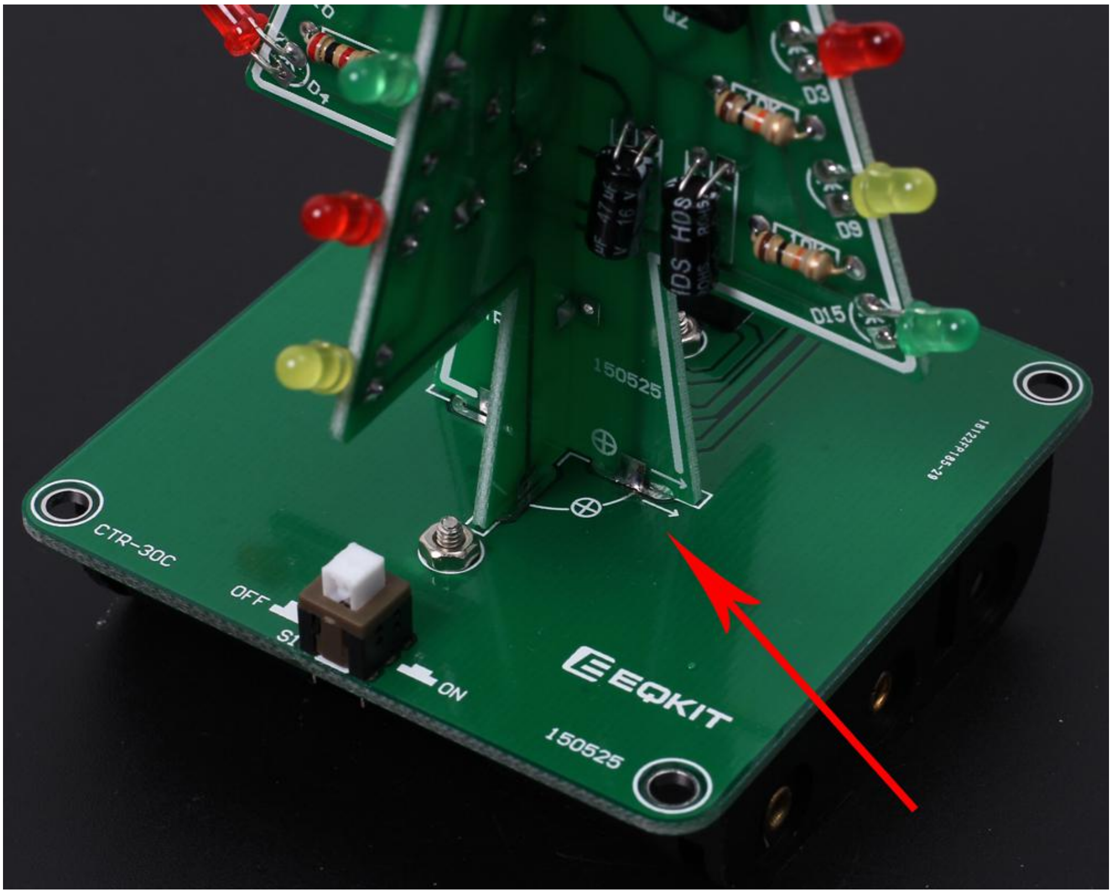
Tips:

First peel the insulation of the wire, and then welding fixed, and then cut off the excess wire




BAT4.5V
DC 5V
J1
EQKIT
CTR-30C
OFF
S1
ON
150525

Step 19: Fixed CTR-30A and CTR-30B on CTR-30C.Align the two positioning heads and then fixed with tin.



Step 20:Install the top LED.Note the positive and negative of LED.At this point, the installation is complete!!




## 7.Effect demonstration


EQKIT
CTR-30C
OFF
S1
ON
150525


CTR-30C
OFF
ON
EQKIT
150525




EQKIT
CTR-30C
OFF
S1
ON
150525








CTR-30A
150525











